Overview

Revenue breakdown for investment banks

Investment banking

- Underwriting and distribution (global):
  - Equity
    - IPOs
    - Other equity (seasoned, ADR, rights..)
  - Fixed income:
    - Corporate bonds
      - Investment grade
      - High yield
      - Convertibles
    - Municipal
    - Structured debt
  - Public offering and private placements
Investment banking

Financial advisory:
- Mergers and acquisitions
- Corporate defense
- Financial restructuring
- Divestitures
- Joint ventures
- Stock buybacks, dividend policy
- Risk management

Equity securities

Market making
- As principal –
  - trade to its own account but try to unload risks
- As agent
  - find a counter party to the transaction for a fee
- Recent acquisitions of SLK by Goldman and Herzog by Merrill indicate an expanded push into market making.

Trading
- For clients
- Proprietary
- Trades in multiple markets and all type of securities
Equity securities

- **Equity services**
  - Prime brokerage – service hedge funds
    - Provide trading services including execution and clearing and settlement.
    - Provide back office services including risk management.
  - Custody - hold securities on behalf of investors.
  - Stock loan - facilitates locates for short selling

Fixed income securities

- **Market making**
  - Global in all types of debt and related products:
    - Corporates
    - Government, agency
    - Municipals
    - Mortgage back securities and other secured assets
    - International fixed income
    - Swaps

- **Trading**
  - For clients
  - Proprietary

- Facilitates lending in the bond markets
Derivatives, Currencies, Commodities

- Market maker
  - Spot markets
  - Futures
  - Options
- Trading
  - For clients
  - Proprietary

Principal Investments
Merchant banking

- Invests banks capital in various securities or funds for investment or strategic purpose. For example:
  - Investment in private equity funds. The bank is often the general partner.
    - Venture capital funds
    - Real estate funds
    - Hedge funds
    - LBO funds
    - Distressed bond funds (vulture funds)
  - Investments in connection with M&A or Restructuring.
Individual investor services

- Provide trading and advising and research services to individual investors.
  - Trade execution:
    - Individual brokers
    - Online trading
  - Trade advice
    - Use the firm analyst research support
  - High net worth individuals group

- Revenues are either from charging fees per trade, or from charging a flat fee on the account balance.

Asset management

- Generate management fee from assets under management in return from providing investment advisory services and a diverse set of investment choices.
  - Mutual funds.
  - Trust funds for institutional investors.
  - Specialty funds that are offered by merchant banking division.

- Revenues depend primarily on total assets under management and the classes of assets.
  - Investment management in riskier assets yields higher fees.

- Revenues are only indirectly related to performance:
  - Usually there no profit sharing on investment gains.
  - Better performance is a marketing tool to get more assets under management.
Topics in IPO underwriting

- IPO underpricing
- Underwriter fees
- Underwriter support in the aftermarket

IPO underpricing
IPO Underpricing

- Underpricing is the difference between the offer price of an IPO and its close price (or open price) on the first day of trade.
- In the US underpricing has always been a part of IPO’s.
- The average underpricing is around 15%.
- Underpricing is found in every country in the world. (with varying degrees)
- Underpricing is found in every pricing mechanism (auction, book building, fixed price).

Number of IPO’s per month
IPO Underpricing per month

IPO underpricing per country
Potential explanations for underpricing

- **Underwriter incentives are to underprice**
  - Reduce the capital risk of underwriting agreement.
    - If there was no underpricing underwriters would have charged higher fees to compensate them for increase cost.
    - But we see underpricing in best effort contracts and auctions.
  - Avoid litigation risk.
  - Can have “freebees” to give its best clients.

- **IPO firm may not mind the cost as much**
  - The firm sell in the IPO only a small portion of its shares (5%-15%) so underpricing cost as a fraction of firm value is much smaller.
  - Can signal and “leave a good taste with investors” that can help in future offerings.
    - No empirical support. On average the probability of an SEO is unrelated to IPO return.
  - Use IPO as a marketing event.
    - Investors are also customers. More will hear and have “warm feeling” to successful IPO’s.
    - A successful IPO may lure potential customer.
Potential explanations for underpricing

- Informational cascades.
  - If investors pay attention to the demand by other investors then they will want to buy more if others buy more (and less if others are not buying). This creates a "bandwagon effect".
  - Underwriters and issuers will have incentives to underprice so that this effect will work for them.
  - Interesting implication about upward sloping demand curve for IPO shares. When prices are revised up investors will increase their demand.
Potential explanations for underpricing

- **Winner’s curse**
  - The nature of the game is that “hot” IPO’s go up, and hot IPO’s are oversubscribed. Thus investors get less of the winner IPO’s and more of the loser IPO’s.

<table>
<thead>
<tr>
<th>Stock</th>
<th>IPO return</th>
<th>Want to invest</th>
<th>Allocate</th>
<th>Invest</th>
<th>Post IPO value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>60%</td>
<td>$1000</td>
<td>25%</td>
<td>$250</td>
<td>$400</td>
</tr>
<tr>
<td>B</td>
<td>30%</td>
<td>$1000</td>
<td>50%</td>
<td>$500</td>
<td>$650</td>
</tr>
<tr>
<td>C</td>
<td>-30%</td>
<td>$1000</td>
<td>100%</td>
<td>$1000</td>
<td>$700</td>
</tr>
<tr>
<td>Tot/Avg</td>
<td>20%</td>
<td>$3000</td>
<td></td>
<td>$1750</td>
<td>$1750</td>
</tr>
</tbody>
</table>

Underwriting fees

The 7% solution

*Chen and Ritter, JF 2000*
Issuing costs

- Administrative
  - direct cost such as filing cost, accounting, legal, printing and more.
- Underwriting (spread)
- Underpricing
- Indirect expenses
  - Management time
- Overallotment (Green-shoe) option

The 7% solution

- Underwriting spread in the US is clustered around 7%
- Clustering increases in the 1990s
The 7% solution

![Graph showing clustering in deals.](image)

- Clustering is particularly apparent in moderate size deals.

Possible explanations:
- Collusion
  - Unlikely, too many people involved
- Strategic pricing (like airlines)
  - Decision not to compete on price so not to drive profits to 0.
- There are other sources of revenues to underwriters and costs to the firm such the overall gain/cost of IPO is not 7%
  - Underpricing for the firm
  - Market making revenues, and analyst coverage cost to the underwriter.
Over all fee distribution

- Underwriter form syndicates that include several brackets:
  - Book manager (lead underwriter)
  - Co-managers
  - Other underwriters
- Why do underwriters need a syndicate?
  - Risk sharing
    - Is this needed today?
  - SEC regulated Capital requirement
    - Is this needed today?
  - Help in distribution
    - Is this needed today?

Over all fee distribution

- Over time the total number of syndicate members has declined but number of co-managers has increased.
Over all fee distribution

- The underwriting 7% fee is split among syndicate members:
  - Management fee
    - About 20% of the underwriting fee (1.4% of the offer)
    - Split between book manager and co-managers on an uneven basis
  - Underwriting fee
    - 20%-25% of the underwriting fee
    - Split among syndicate members based on number of shares they underwrite.
    - Net of syndicated expenses including price support
  - Selling concession
    - Amounts 55%-60% of the underwriting fee
    - Split among syndicate members based on number of shares they get credited, not to the number of shares they underwrite!
    - Book manager gets the lion shares of credited shares.
- At the end the book manager get the vast majority of the fees
- Example (table 5)

After market activities

Stabilization activities by underwriters after initial public offerings

Renna Aggarwal, JF 2000
Stabilization activities by underwriters

- Stabilizing activities are actions taken by the underwriter to stimulate demand or restrict supply in the days after an IPO.
- Three forms of aftermarket stabilizing activities
  - Underwriters post a stabilizing bid to purchase shares at a price not exceeding the offer price “pure stabilization”.
  - Underwriter initially sell shares in excess of the original amount offered thereby taking a short position “aftermarket short covering”. This short position can be covered by:
    - buying stock in the market or
    - Exercising the overallotment option.
  - Underwriters panelize members of the selling group whose customers quickly flip shares, penalty bids.

Pure stabilization

- The SEC in 1940 put a statement “The commission is unanimous is recognizing that stabilizing is a form of manipulation”
- The SEC chose to allow pure stabilization but put several forms of disclosure; for example, stabilizing bids will have special marks that traders will recognize.
- In the sample of the paper and an additional sample the author found there were ZERO pure stabilization bids.
- Thus while allowed it is not used.
After market short covering

- Overallotment option (green shoe).
  - First introduced in 1963 with the Green Shoe Co. Underwriters have the option to sell to the public up to an additional 15% of the offering size and then have 30 days to exercise the option and buy the stock from the company at original price (offer price – spread).

- Underwriter can also take a “naked short” position (sell to public more than the 15% then can buy through overallotment option). This short position that must be covered by buying back in the market.

- Short covering is not regulated by the SEC and does not require reporting.

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After market short covering
Example:

- Assume:
  - Offer size 1,000,000
  - Offer price 15
  - Underwriter spread $1 (thus cost to underwriter $14 per share)
  - Overallotment option: 150,000

- If demand is high (no stabilization concerns) underwriter profits are maximized if it over-sells the offer by 150,000 shares and exercise the overallotment option. (higher underwriter fee).
After market short covering

Example:

If demand is weak then the underwriter anticipates the need to buy in the market and will take a short position (and sometimes naked short) at the offering.

- If underwriter sells 1,200,000 shares at the offering the 200,000 is short position of which 50,000 is naked short (must be covered by buying stock).

If price trades below 14:

- Buy the 200,000 shares in the market.
- Earn a profit on the short position (of at least $1 per share).
- Stabilization is important.

If 14<=P<15

- For maximizing profit will buy 50,000 shares in the market and exercise the overallotment option.
- For stabilization: will buy $200,000 shares in the market for a smaller profit.
- Stabilization is important.

If 15<=P<15.75 (positive returns weak)

- For maximizing profit will buy 50,000 shares in the market (at a loss) and exercise the overallotment option (for profit of $1).
- For stabilization: will buy $200,000 shares in the market for a loss.
- Stabilization is important.
After market short covering

Example:

- If $P >> 15.76$ (Strong returns say $P = 20$)
  - For maximizing profit will buy 50,000 shares in the market (at a significant loss) and exercise the overallotment option (for profit of $1$)
  - For stabilization: will buy $200,000$ shares in the market for a loss.
  - Stabilization is not important.
- Figure 1, Table 2, Table 4, Figure 2, Figure 3

Penalty bids

- The purpose of penalty bids is to control flipping
  - Flipping – selling of allocated shares in the immediate aftermarket
  - Notice that only allocated shares can trade (until the lockup expires 180 days later) so some flipping is needed to provide trading volume.
  - When demand is high underwriters are happy to see flipping and higher commissions on trading.
  - When demand is low flipping force underwriter to increase stabilization activity.
Flipping activities

- Descriptive data from “Allocation of initial public offerings and flipping activities” Aggarwal and McDonogh, JFE 2002.

- Data source for flipping:
  - Depository trust company DTC has an IPO tracking system that provides:
    - The lead underwriter with a daily report of flipped shares by each of syndicate member clients (aggregated per member).
    - Each syndicate member with a detailed list of which customers sold their originally allocated shares.
    - The service can last for 120 days, but most banks terminate it after 30 days.

- Flipping is more common in IPOs that price above the range.
Flipping activities

Table 5

<table>
<thead>
<tr>
<th></th>
<th>Very Cold</th>
<th>Cold</th>
<th>Warm</th>
<th>Very Hot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day 1 Return &lt; 0%</td>
<td>0 &lt; Day 1 Return &lt; 30%</td>
<td>10 &lt; Day 1 Return &lt; 60%</td>
<td>Day 1 Return &gt; 60%</td>
</tr>
<tr>
<td>Shares Flipped by Institutions as % of Shares Offered</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>Shares Flipped by Institutions as % of Shares Offered</td>
<td>18.80</td>
<td>17.82</td>
<td>21.37</td>
<td>18.79</td>
</tr>
<tr>
<td>Shares Flipped by Institutions as % of Shares Offered</td>
<td>11.33</td>
<td>6.11</td>
<td>11.11</td>
<td>6.57</td>
</tr>
<tr>
<td>Shares Flipped by Institutions as % of Total Shares Traded</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>Shares Flipped by Institutions as % of Total Shares Traded</td>
<td>8.84</td>
<td>6.07</td>
<td>8.70</td>
<td>6.06</td>
</tr>
<tr>
<td>Shares Flipped by Institutions as % of Total Shares Offered</td>
<td>8.43</td>
<td>6.07</td>
<td>8.43</td>
<td>6.07</td>
</tr>
</tbody>
</table>

- Hot IPO’s has higher flipping activity than cold IPO’s
- Institutions flip more than retail.
Penalty bids

- Underwriting contract may or may not include penalty bids.
- Even if penalty bids are part of the contract they may not be assessed.
- Each firm that makes up the selling group get a commission of the shares it sold.
- If customers of the selling member sold their shares in the first few days that member is subject to the penalty fee at the discretion of the lead underwriter.
- Assessment of penalty bids is a forfeiture of selling commissions received on the distribution of shares that are repurchased by the lead underwriter in the market because of flipping.

Penalty bids

- Underwriters have the incentives to limit flipping.
  - SEC is investigating discriminatory behavior by underwriters in favoring institutions by assessing penalty bids only on individual who flipped.
  - Underwriter also penalize customers who flip by keeping them out of future IPO's.
- Table 5 (underwriter support)
Role of analyst coverage

Conflict of interest and the credibility of underwriter analyst recommendation

Michaeli and Womack, RFS 1999

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Conflict of interest and analyst recommendations

- **Motivation**: is to look at the impact of the conflict of interest between analyst recommendation to clients and investment banking activities.
- **Investment banks serve both investors (individual and institutions) and corporations.**
  - To investors they provide research and recommendation in exchange for trading fees
  - To corporation the provide investment banking services (underwriting and advisory).
- **Research coverage is one implicit service that the investment bank provides.**
Sell side analysts role

- Provide research reports and recommendations to outside customers.
- Most analysts specialize in an industry.
- Their contribution is in three forms:
  - Gathering information about a firm or industry.
    - Reg FD (fair disclosure) restricts analyst ability to get (proprietary) information from management.
  - Analyze the data and form estimates and recommendations
    - Earnings forecast
    - Buy sell recommendation
    - Price targets
  - Present the data to customers in written reports, phone calls, and presentations.

Sell side analysts compensation

- Analyst reputation (not necessarily accuracy).
  - All American ranking
  - Industry ranking
- Timely production of reports.
- Last but not least: Ability to generate investment banking revenues.
  - Easier to measure and link to analyst.
Conflict of interest and analyst recommendations

- Sample, data and methodology:
  - Study 391 IPO’s in 1990-1991
  - Recommendations data from First call
  - Identify lead underwriter.
  - Conduct short run and long run event study for returns.

Table 3 – distribution of buy recommendations across all IPO’s
  - On average lead underwriter is considerably more optimistic
Conflict of interest and analyst recommendations

Table 5 – Event study relative to buy recommendation:

- Lead underwriter is quicker to put a buy recommendation
- Announcement return is positive in all cases but larger for non-lead.
- Long run return for lead are small to negative and positive for non-lead.
Conflict of interest and analyst recommendations

Conclusions
- Evidence suggests that underwriter recommendation are biased and inferior to those made by non-underwriter.
- Authors are not sure if this is illegal (but in hindsight we know better)
- “At the very least questionable business practice”.

Other explanations for the positive bias:
- “Cognitive bias” Underwriter genuinely believes that the firms they underwrote are better (like parents believe their children are special), much slower to respond to bad information about their firms.
- Selection bias “winners curse”, underwriters are selected because of their analyst favorable opinion.
Equity offerings
The issuing of new securities

Common Stock

- Firms with no public equity outstanding:
  - Initial public offering (IPO)
    - Primary issue - Firm sells new shares and get the proceeds.
    - Secondary issue - Current owners sell their shares, the firm does not get the proceeds

- Firms with public equity outstanding:
  - Seasoned equity offering
  - Rights issue
Seasoned equity offerings

- Public offerings by firms that already have publicly traded stock
- Filling requirements are identical to those of IPO.
  - SEC registrations
  - Review period
  - Prospectus
- The big difference is that since the stock is already traded, pricing the issue is easier less “information asymmetry”.

Seasoned equity offerings

- While pricing SEOs is easier it is by no means easy! And we still observe deviations from market prices:
  - Discounting = Close price the day before the offer-offer price.
  - Underpricing= Close price the day off the offer-offer price.
- A new study “Discounting and underpricing in seasoned equity offerings” Altinklic and Hansen, forthcoming JFE studies this issue.
In the 1990s average underpricing is 2.58%.
- Larger for NASDQ
- Average discounting is similar 2.47%

The underpricing distribution shows:
- In about 25% of the cases there is 0 underpricing.
- The distribution is skewed to the right
- In about 20% the underpricing is negative
The discounting distribution shows that negative discounting are rare.

The offer day distribution is more symmetric.

Underwriter spread in SEOs is around 5.5% (less than IPOs)

Spread is higher for smaller issues.

No apparent clustering.
Cost of Seasoned Equity Offerings

- Total cost of SEOs include:
  - Underwriter spread (5.5%) 
  - Direct expenses? (about 1%-2%) 
  - Underpricing (2.5%) 
  - Announcement day negative return 
    - On average 3% of the entire equity thus a much bigger fraction of the offer amount. 
    - This may be a signaling effect and thus not directly related to the offer. 
  - Long term underperformance.

Performance of SEOs

- Seasoned Equity offering (SEO)
  - An average of 72% increase in the stock price in the year prior to the offering. 
  - An average 2%-4% decline in price on the announcement of SEO. 
  - Poor stock performance over the long term (45% less than a control group over a 5 year period). 
  - Decline in profitability and performance following the SEO.
Long-run performance of public equity offerings

**Annual excess returns of IPOs after going public**
Loughran, Ritter (1995)

**Annual excess returns of SEOs after issuing**
Loughran, Ritter (1995)

**Rights**
- An issue of common stock to existing shareholders
- Each shareholder has the option to buy additional shares at the *subscription price*.
- A number of rights are needed to purchase one share.
- Shareholders can:
  - Subscribe to the full number of shares
  - Sell the rights
  - Do nothing, let rights expire.
- Effect on share price ...
Rights

- Pure rights account for less than 10% of new equity issues.
- Direct rights have low issuance cost relative to underwritten SEO.
- But the issuing firm bears a risk that the rights will not be subscribed and it will be left with out the capital it need.
  - SEC requires a minimum subscription period of 13-14 days. During this period the rights can get out of the money.
- Issuing firms often get a standby underwriting agreement to grante the sell of the issue. In this agreement all of the unexercised rights devolve to the underwriter who must subscribe to those rights.
  - If shareholders act optimally the underwriter is writing a put to the firm. Its payoff on expiry = -max(0,K-S)*Number of rights devolved.

Standby underwriting Vs. SEO underwriting

**SEO direct underwriting**
- Price determined the day before issuance.
- Offer is pre-sold in non-binding commitments
- Can reduce risk by shorting the stock and using the over-allotment option.

**Standby underwriting**
- Subscription price is in the prospectus, at least 14 days before expiry.
- Cannot pre-sell because of uncertainty about quantity.
- Can reduce risk by laying off stock.
Risk layoff and fees

- Since underwriter is writing puts on the firm, it can reduce its risk to the stock by buying rights (calls) and shorting the stock.

<table>
<thead>
<tr>
<th>At expiry:</th>
<th>$S^*&gt;K$</th>
<th>$S^*&lt;K$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write put, $-\max(0,K-S)$</td>
<td>0</td>
<td>$-(K-S^*)$</td>
</tr>
<tr>
<td>Buy rights, $\max(0,S-K)$</td>
<td>$S^*-K$</td>
<td>0</td>
</tr>
<tr>
<td>Short stock</td>
<td>$-S^*$</td>
<td>$-S^*$</td>
</tr>
<tr>
<td>Lend, $PV(K)$</td>
<td>$K$</td>
<td>$K$</td>
</tr>
<tr>
<td>Net position</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Underwriter fee

- The underwriter fee has two components:
  - Standby fee (minimum fee) - resembles an insurance fee that is collected regardless of the outcome.
    - This fee increases with the volatility of the stock and decreases with the underpricing of the subscription fee.
    - On average it is 0.91%
  - Take-up fee – additional payment per share. Includes:
    - Shares devolved to the underwriter (including shares not subscribed for by sleepy investors).
    - Shares exercised by the underwriter from rights bought in the market.
    - On average the maximum (if no right gets subscribed) is 3.5%.
Table 3
Share subscription statistics for underwritten common stock rights offerings (1963–1985)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Minimum</th>
<th>Maximum</th>
<th># obs. = 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Percentage devolvement on the underwriters&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.21%</td>
<td>0.76%</td>
<td>0%</td>
<td>19.51%</td>
<td>31</td>
</tr>
<tr>
<td>7 Apparent subscription percentage&lt;sup&gt;b&lt;/sup&gt;</td>
<td>96.78%</td>
<td>99.24%</td>
<td>80.49%</td>
<td>100.00%</td>
<td>0</td>
</tr>
<tr>
<td>8 Percentage purchased by the underwriters&lt;sup&gt;b&lt;/sup&gt;</td>
<td>15.80%</td>
<td>15.27%</td>
<td>0%</td>
<td>45.58%</td>
<td>18</td>
</tr>
<tr>
<td>9 Percentage of the shares sold by the underwriters in the offering period&lt;sup&gt;b&lt;/sup&gt;</td>
<td>15.93%</td>
<td>12.90%</td>
<td>0%</td>
<td>43.18%</td>
<td>15</td>
</tr>
<tr>
<td>10 Actual subscription percentage&lt;sup&gt;c&lt;/sup&gt;</td>
<td>80.98%</td>
<td>82.79%</td>
<td>51.48%</td>
<td>100.00%</td>
<td>0</td>
</tr>
</tbody>
</table>

— Layoffs and underwritten rights offers, Ajai K. Singh, JFE, 1997

Table 4
Underwriting fee and costs of the rights offering

The sample firms are NYSE/AMEX listed public utilities. All the offers in the sample have a split-fee standby underwriting expenses are reported as a percentage of the gross proceeds of the rights offer.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Minimum fee&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.91</td>
<td>0.82</td>
<td>0.39</td>
<td>2.11</td>
</tr>
<tr>
<td>2 Maximum fee&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.87</td>
<td>3.59</td>
<td>0.94</td>
<td>10.00</td>
</tr>
<tr>
<td>3 Actual fee&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.44</td>
<td>1.29</td>
<td>0.46</td>
<td>3.80</td>
</tr>
<tr>
<td>4 Other expenses&lt;sup&gt;d&lt;/sup&gt;</td>
<td>1.02</td>
<td>0.86</td>
<td>0.28</td>
<td>3.75</td>
</tr>
<tr>
<td>5 Actual total expenses = (Actual fee + Other expenses)</td>
<td>2.46</td>
<td>2.20</td>
<td>0.89</td>
<td>5.86</td>
</tr>
</tbody>
</table>

— Layoffs and underwritten rights offers, Ajai K. Singh, JFE, 1997
American Depository Receipts (ADRs)

- A way to foreign companies to list their shares and raise capital in the US.
- ADR is a negotiable certificate issued by a depository bank representing ownership in a specified number of shares in a foreign firm.
- Substantial growth in this market:
  - As of 1996 more than 300 ADRs are listed in the US.
  - A third from emerging markets.
  - In 1995 $8.5 billion raised.
  - Annual trading volume $276 billion.

American Depository Receipts (ADRs)

**Advantages to issuer:**
- Able to attract a broader investor base
- Cost effective bookkeeping
- May have fewer SEC filing requirements

**Benefits to investors**
- Easy to trade
- Less transaction cost compare to buying shares directly
- Timely information, (in English)
- Trade in US dollars and receive dividend in dollars
- Arbitrage is possible by claiming the shares.
Fixed income securities

Corporate debt
Investment banking
Eli Ofek

Bond Universe

Dollars in Trillions

$3.0 U.S. Treasuries
$1.9 Agencies
$0.9 Asset-Backed
$3.4 Corporates
$2.5 Mortgage-Backed

Total: $15,801,200,000,000 (includes Municipals and Money Market)
Corporate debt securities

- Corporate debt can take many forms.
- The menu securities has grown rapidly in the last 20 years as a result of financial innovations and deregulation in the financial markets.
- Following are different debt characteristics available for corporations.

Debt securities

- Maturity
  - Corporate debt maturity ranges from commercial papers (90 days) up to 100 year bonds.
  - Match maturity of the debt to the maturity of the assets.
  - Low credit rating firms tend to offer 10-19 year debt, while investment grade firm issue the vast majority of shorter and longer term debt.
Debt securities

- Repayment provision
  - Usually interest is paid periodically and face value at maturity.
  - Sinking fund, debt is paid in installments - Mortgage
  - Zero coupon bonds (No payments before maturity)
  - Other ..

Floating versus Fixed rate interest,

- Floating debt structure:
  - Typically, 9 month to 5-year maturities.
  - Pays interest quarterly or monthly.
  - Interest reset quarterly or monthly as a fixed spread over corresponding LIBOR
  - Buyers are dominated by banks, trust companies, and money market funds

- Choice depends on variety of factors:
  - Size of the risk premium embedded in the yield curve.
  - Expected volatility of interest rates.
  - Earnings sensitivity to interest rate.

- Very liquid swap market between fixed and floating.
- Fixed rate bond + call provision
Swaps

- First swap was between IBM and world bank in 1981
- Enables corporations swap payments on their loan
  - Firms can borrow where they have relative advantage and swap into the type loan they want.
  - In interest rate swaps only interest payments are swapped not notional amount.
- Swap can be profitable between firms that have a relative advantage in a particular loan, no need for absolute advantage.
  - A swap is profitable even when one firm (A) has a higher borrowing cost than a second firm (B) both markets (fixed and floating rate market), as long as the spread A pays over B is different for each market.

Swaps
Role Financial intermediaries

- Swaps is an innovation that was created and supported by financial institutions.
- Investment banks opened swap desks that have many functions in the market:
  - Act as a broker, and match between two counterparties.
  - Act as market maker
    - Hold inventory of swaps
    - Take one leg of the transaction
    - Help price the issue
  - Other services:
    - Act as a clearing house and responsible for the transfer of cash between counterparties
    - Grantee the credit risk of a transaction
      - Often the swap subsidiary is especially capitalized to get a AAA rating
Debt securities

- **Seniority** - subordinated debt must give preference to other creditors in case of default.
  - Bank debt is often more senior and public bonds are often subordinated.

- **Security**
  - It provides that the property can be sold in event of default to satisfy the debt.
  - A mortgage is used for security in tangible property.

- **Indenture**
  - Restrictive covenants
    - Bank debt (and privately placed debt) tend to have many restrictive covenants while public debt has the less.

Corporate Bond Ratings

- Evaluates the risk of nonpayment, or default, on debt payments.
- Moody’s and S&P are the duopoly of credit ratings.
- Fitch is the third agency.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Moody’s</th>
<th>S&amp;P</th>
<th>Fitch</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triple A</td>
<td>Aaa</td>
<td>AAA</td>
<td>AAA</td>
<td>Gilt edge, prime, maximum safety</td>
</tr>
<tr>
<td>Double A</td>
<td>Aa</td>
<td>AA</td>
<td>AA</td>
<td>Very high grade, high quality</td>
</tr>
<tr>
<td>Single A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>Upper medium grade</td>
</tr>
<tr>
<td>Triple B</td>
<td>Baa</td>
<td>BBB</td>
<td>BBB</td>
<td>Lower medium grade</td>
</tr>
<tr>
<td>Double B</td>
<td>Ba</td>
<td>BB</td>
<td>BB</td>
<td>Low grade, speculative</td>
</tr>
<tr>
<td>Single B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>Highly speculative</td>
</tr>
</tbody>
</table>
How Are Ratings Determined?

- Bond ratings are usually ordered and paid for by the issuing firm.
  - A rating helps market the issue.
  - Provide the rating agencies with additional information about the firm and discussions with management.
- A firm may choose not to have its bond rated (NR)
  - In some cases rating agencies will rate debt offering that the firm did not solicit. The agencies describe this as service to their customers, but it also pressures firm to order and pay for the ratings so that “their side can be heard”.

How Are Ratings Determined?

- Corporate credit rating depends on both qualitative and quantitative assessment.
- Qualitative assessment: S&P’s “Business Profile”
  - Competitive position
  - Management: quality and commitment to credit strength
  - Regulatory relationships
- Quantitative assessment:
  - Ratio analysis (coverage ratios, leverage, profitability, liquidity)
  - Scoring models do well in predicting ratings (80% success)
- Rating of the different agencies often disagree.
Corporate Bond Spreads vs Ratings

**Assumes 10-Year Maturity**

<table>
<thead>
<tr>
<th>Rating</th>
<th>Spread (Basis Points)</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAA</td>
<td>+100</td>
<td>6.25%</td>
</tr>
<tr>
<td>AA</td>
<td>+125</td>
<td>6.50%</td>
</tr>
<tr>
<td>A</td>
<td>+160</td>
<td>6.85%</td>
</tr>
<tr>
<td>BBB</td>
<td>+200</td>
<td>7.25%</td>
</tr>
<tr>
<td>BB</td>
<td>+400</td>
<td>9.25%</td>
</tr>
<tr>
<td>B</td>
<td>+800</td>
<td>13.25%</td>
</tr>
</tbody>
</table>

- Investment grade debt is rated BBB- or above.
- High yield debt is BB+ and below.

The corporate high yield market in the US

Summary
New issues of high yield public debt

Annual yield spread
High yield default rates

Annual return spread
high yield-10 yr treasury
Debt securities
Who to borrow from?

- Historically there were two sources for debt financing
  - Bank debt
  - Public debt
- Today there are many sources of debt in between:
  - Bank debt
  - Private placement
  - Syndicated bank debt
  - Rule 144A
  - Rule 144A with registration rights
  - Shelf registration
  - Public offering

Debt securities

- Country and currency
  - Use as a hedge for foreign operations.
  - Can borrow in low interest rate currencies.
  - Very liquid swap market
- Imbedded options
  - Call option - allows the firm to repay the debt early.
  - Put option - allows the investor to demand early repayment in special cases
Underwriting public bonds

- SEC registration requirements for public debt and public equity are the same.
- Underwriters perform a similar role in underwriting public debt, as they do in underwriting public equity.
  - Advise to the firm on the offering process and preparation of the prospectus
  - Buys the issue (in firm commitment contracts)
  - Resells the issue.

Underwriting public bonds

- Adds credibility, certification
  - Commercial banks that underwrite debt of firms where they have lending relations enjoy lower rate on the bonds they offer. Presumably because of their knowledge of the firm.
- Stabilization of the market price.
- Provide liquidity - underwriters are market makers in the bonds they underwrote.
Table I. Market Share for Top Ten Investment Banks

This table shows the ten investment bankers with the largest market share of total gross proceeds (in $ Billions), and the number of issues (in parentheses) underwritten for nonconvertible industrial debt issues, exclusive of those with put features, floating interest rates, and shelf registrations, offered over the period 1990 through 1997.

<table>
<thead>
<tr>
<th>Investment Bank</th>
<th>Investment Grade</th>
<th>Below Inv. Grade</th>
<th>Total Proceeds</th>
<th>Market Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goldman Sachs</td>
<td>12.7 (402)</td>
<td>15.9 (84)</td>
<td>98.0 (486)</td>
<td>22.4</td>
</tr>
<tr>
<td>Merrill Lynch</td>
<td>43.9 (256)</td>
<td>22.7 (103)</td>
<td>66.6 (359)</td>
<td>15.2</td>
</tr>
<tr>
<td>Morgan Stanley</td>
<td>49.0 (280)</td>
<td>10.7 (54)</td>
<td>59.7 (334)</td>
<td>13.6</td>
</tr>
<tr>
<td>First Boston</td>
<td>38.1 (179)</td>
<td>7.6 (46)</td>
<td>45.7 (225)</td>
<td>10.4</td>
</tr>
<tr>
<td>Salomon Bros.</td>
<td>32.5 (213)</td>
<td>9.9 (53)</td>
<td>42.4 (266)</td>
<td>9.7</td>
</tr>
<tr>
<td>Lehman Bros.</td>
<td>23.9 (123)</td>
<td>4.8 (31)</td>
<td>28.7 (154)</td>
<td>6.6</td>
</tr>
<tr>
<td>DLJ*</td>
<td>1.7 (13)</td>
<td>20.1 (95)</td>
<td>21.8 (108)</td>
<td>5.0</td>
</tr>
<tr>
<td>J.P. Morgan</td>
<td>19.2 (130)</td>
<td>2.5 (16)</td>
<td>21.7 (146)</td>
<td>5.0</td>
</tr>
<tr>
<td>Bear Stearns</td>
<td>3.6 (12)</td>
<td>5.5 (31)</td>
<td>9.1 (43)</td>
<td>2.1</td>
</tr>
<tr>
<td>Dillon Reed</td>
<td>3.1 (17)</td>
<td>2.4 (19)</td>
<td>5.5 (36)</td>
<td>1.3</td>
</tr>
<tr>
<td>Top Ten Total</td>
<td>297.2 (1,625)</td>
<td>102.1 (332)</td>
<td>399.2 (2,157)</td>
<td>91.3</td>
</tr>
<tr>
<td>Total Market</td>
<td>312.1 (1,763)</td>
<td>125.4 (686)</td>
<td>437.6 (2,449)</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Donaldson, Lufkin, and Jenrette.

Table II. Sample Descriptive Statistics

This table presents the sample descriptive statistics for 2,449 nonconvertible debt issues offered from January 1, 1990 through December 31, 1997.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proceeds</td>
<td>$178.6 Million</td>
</tr>
<tr>
<td>Maturity</td>
<td>12.7 Years</td>
</tr>
<tr>
<td>Call Protection</td>
<td>10.7 Years</td>
</tr>
<tr>
<td>Underwriter Spread</td>
<td>110.8 Basis Points</td>
</tr>
<tr>
<td>Treasury Spread</td>
<td>169.5 Basis Points</td>
</tr>
<tr>
<td>Count*</td>
<td>4.0</td>
</tr>
<tr>
<td>Expenses†</td>
<td>29.3 Basis Points</td>
</tr>
</tbody>
</table>

*The number of issues underwritten by the same investment banker per issuer.
†For the 2,449 issues examined, 1,974 had expenses recorded in the database.
Underwriter spread increases as bond rating decreases.
No change in spread over time.
Higher spread for higher maturity.

Shelf registration

Shelf Registration (Rule 415) went into effect in 1982.
Permits certain issuers to use a single registration to sell a certain amount of a certain class of securities at one or more times within the next two years.
The underwriter waiting period is shortened from several weeks to hours, and the process of placing of the issue can start immediately.
Shelf registration

Advantages of shelf registration
- Borrowers can raise debt much faster than regular public offering and thus respond to cash needs and market prices in a timely manner.
- Borrowers can borrow when it need the cash instead of borrowing a large sum upfront.
- Issuing cost could be reduced as redundant fillings will be eliminated.

Disadvantages of self registration
- Due diligence obligation of the underwriter could be harmed. As more time passes since the original filing the underwriter’s ability to verify that all the relevant disclosures are made will be limited.

Evidence suggests that shelf registration only marginally lowers issuance cost.
Initially it was believed that shelf registration will be used also in SEO, but that did not happen.
Shelf registration is particularly common for investment grade issues.
Private placements

- Offering of securities that are exempt from SEC registration.
- "Traditional private placements"
  - Small size offerings (up to $1 million per year)
  - Commercial paper (up to 9 months in maturity).
  - Regulation D (rule 506) – private placement is limited to 35 nonaccredited investors but there is no limit on accredited investors or on the amount raised.
    - Accredited investor must have a net worth on $1,000,000 or annual income of $200,000. Nonaccredited investors must also be sophisticated and capable of evaluating the merit of the investment.
    - Securities are considered restricted and may not be freely traded.
  - Others (Regulation A, Intrastate offering …)

Private placements - Rule 144A

- Was adopted by the SEC in April 1990.
- Establishes conditions under which privately placed securities can be traded freely among “Qualified institutional investors” (QIB)
  - QIB is an entity that owns (or invests for other QIBs) at least $100 million.
  - Some additional restriction on the sale of securities in the first year.
- Can carry registration rights that allow the security to be registered with SEC and trade publicly (often within 180 days of issuance).
- Effectively rule 144A is a more liquid class of private placements.
- Investment banks have committed significant resources and personal to make markets in 144A bonds.
## Comparison of Market Alternatives

<table>
<thead>
<tr>
<th></th>
<th>Private placement</th>
<th>Rule 144A</th>
<th>Public market</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Timing</strong></td>
<td>4-6 weeks</td>
<td>4-6 weeks</td>
<td>Up to 12 weeks</td>
</tr>
<tr>
<td><strong>Spread</strong></td>
<td>10-15 bp wider</td>
<td>5 bp wider</td>
<td>Tightest pricing</td>
</tr>
<tr>
<td><strong>Issuer cost</strong></td>
<td>Lowest</td>
<td>Low issuance</td>
<td>Highest issuance</td>
</tr>
<tr>
<td><strong>Ratings</strong></td>
<td>Not required</td>
<td>Common</td>
<td>“Required”</td>
</tr>
</tbody>
</table>

---

## Comparison of Market Alternatives

<table>
<thead>
<tr>
<th></th>
<th>Private placement</th>
<th>Rule 144A</th>
<th>Public market</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Investor base</strong></td>
<td>QIBs and accredited investors</td>
<td>Most restrictive only QIBs</td>
<td>Widest – retail + institutions</td>
</tr>
<tr>
<td><strong>Liquidity</strong></td>
<td>Poor, primarily buy-and-hold</td>
<td>Sporadic</td>
<td>Good liquidity</td>
</tr>
<tr>
<td><strong>Covenants</strong></td>
<td>Somewhat restrictive and issuer specific</td>
<td>Not restrictive</td>
<td>Standard, least restrictive</td>
</tr>
</tbody>
</table>
## Comparison of Market Alternatives

<table>
<thead>
<tr>
<th></th>
<th>Private placement</th>
<th>Rule 144A</th>
<th>Public market</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maturity</strong></td>
<td>Medium range</td>
<td>Medium range</td>
<td>Long maturities</td>
</tr>
<tr>
<td><strong>Disclosure</strong></td>
<td>Reduced disclosure</td>
<td>Limited, sufficient to facilitate trade</td>
<td>Extensive disclosure required</td>
</tr>
</tbody>
</table>

## High yield and 144A

- It has become common practice to issue high yield debt as 144A with registration rights and use this option to register the issue with the SEC and make it publicly traded.
- The reason for the use of 144A is primarily to speed up the process of bond financing.
  - This is evident from the fact that almost all of the high yield debt issued through 144A carries registration rights that are filed within 180 days.
- Rule 144A means to high yield bond what rule 415 (shelf registration) means for investment grade bonds. The ability to issue debt quickly.
Table 1: Public and 144A below-investment-grade securities issuance by U.S. nonfinancial firms, 1990–1998

<table>
<thead>
<tr>
<th>Year</th>
<th>Public (Smil)</th>
<th>144A (Smil)</th>
<th>Share of issuance (%)</th>
<th>Average issue size (Smil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>3104</td>
<td>0</td>
<td>0</td>
<td>141</td>
</tr>
<tr>
<td>1991</td>
<td>19,132</td>
<td>11</td>
<td>0</td>
<td>247</td>
</tr>
<tr>
<td>1992</td>
<td>40,599</td>
<td>673</td>
<td>1</td>
<td>166</td>
</tr>
<tr>
<td>1993</td>
<td>60,483</td>
<td>11,425</td>
<td>16</td>
<td>174</td>
</tr>
<tr>
<td>1994</td>
<td>31,766</td>
<td>3,900</td>
<td>10</td>
<td>182</td>
</tr>
<tr>
<td>1995</td>
<td>24,593</td>
<td>265</td>
<td>25</td>
<td>202</td>
</tr>
<tr>
<td>1996</td>
<td>34,943</td>
<td>26,824</td>
<td>45</td>
<td>190</td>
</tr>
<tr>
<td>1997</td>
<td>21,527</td>
<td>78,325</td>
<td>78</td>
<td>215</td>
</tr>
<tr>
<td>1998</td>
<td>12,991</td>
<td>59,913</td>
<td>82</td>
<td>217</td>
</tr>
<tr>
<td>Total</td>
<td>249,676</td>
<td>190,539</td>
<td>43</td>
<td>187</td>
</tr>
</tbody>
</table>

Source: Securities Data Company.

In 1993 16% of high yield debt was issued as 144A. By 1997 almost 80% of high yield debt was issued as 144A.

Table 2: Public and 144A below-investment-grade securities issuance, by rating class, 1990–1998

- Rule 144A is a prominent way if issuing bonds for all high yield debt.
- Its use is larger as rating get lower.

<table>
<thead>
<tr>
<th>Rating class</th>
<th>Public securities (Smil)</th>
<th>144A securities (Smil)</th>
<th>Total (Smil)</th>
<th>144A as share of rating class (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Split investment-grade</td>
<td>41,489</td>
<td>15,890</td>
<td>57,749</td>
<td>28</td>
</tr>
<tr>
<td>BB</td>
<td>58,746</td>
<td>20,816</td>
<td>79,562</td>
<td>26</td>
</tr>
<tr>
<td>Split BB</td>
<td>30,016</td>
<td>10,904</td>
<td>40,920</td>
<td>27</td>
</tr>
<tr>
<td>B</td>
<td>106,954</td>
<td>120,807</td>
<td>227,760</td>
<td>53</td>
</tr>
<tr>
<td>Split B</td>
<td>8048</td>
<td>12,712</td>
<td>20,760</td>
<td>61</td>
</tr>
<tr>
<td>Below-B</td>
<td>4053</td>
<td>9412</td>
<td>13,465</td>
<td>70</td>
</tr>
<tr>
<td>Total</td>
<td>249,676</td>
<td>190,539</td>
<td>440,215</td>
<td>43</td>
</tr>
</tbody>
</table>

Source: Securities Data Company.
Public registration on rule 144A issues

- Most high yield bonds that are issued as 144A carry registration rights.
- These rights allow the bond to be public registered within 180 days.
- Registration usually involves putting together a prospectus for an exchange offer of the original debt with a new debt that is effectively identical but trades publicly.

Table 3. Registration of 144A below-investment-grade securities issued by U.S. nonfinancial firms between January 1, 1996 and June 30, 1997.

- Almost all (97%) high yield issues that carry registration right get registered to be publicly traded.
Fig. 1. Distribution of number of days to register 144A securities.

- The vast majority of issues are registered within 180 days
  - Many of those that appear to be in the 210 days category were actually registered within 180 days.

Cost of issuing 144A Vs public

- The paper finds that the spread between 144A issues and public issues with similar ratings, size, maturity, and year of issuance, is effectively zero. This implies that 144A issues with registration rights are priced as if they are public and carry no liquidity premium.
- First time issuers (either public or private) pay 50bp more than repeat issuers.
Universal banking

The role of commercial banks in underwriting securities

Following the great depression, Congress passed the Glass-Steagall act that separated the activities of commercial banks from those of an investment bank.

Beginning in 1987, we witness the crumbling of the Glass-Steagall act, and for all practical purposes commercial banks can now compete with investment banks in the securities market.

Banks wishing to underwrite securities must obtain an approval from the fed and open up so-called section 20 subsidiary.

The section 20 subsidiary is allowed to generate a fraction of its revenues from ineligible activities (underwriting).

- This fraction was initially 5%, later raised to 10% and as of 1997 the fed increased it to 25% of revenues.

Gramm-Leach-Bliley act of 1999, effectively removed all restrictive provisions of commercial banks underwriting in financial securities.

Commercial banks started by opening up section 20 subs and competing primarily in the corporate debt underwriting, but later expanded to equity and advisory.
Table 2. Market share of bank underwritings

<table>
<thead>
<tr>
<th>Year</th>
<th>Debt $Volume</th>
<th># Issues</th>
<th>Equity $Volume</th>
<th># Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>0.00</td>
<td>0.00</td>
<td>0.90</td>
<td>0.00</td>
</tr>
<tr>
<td>1986</td>
<td>0.00</td>
<td>0.00</td>
<td>0.90</td>
<td>0.00</td>
</tr>
<tr>
<td>1987</td>
<td>0.00</td>
<td>0.00</td>
<td>0.90</td>
<td>0.00</td>
</tr>
<tr>
<td>1988</td>
<td>0.00</td>
<td>0.00</td>
<td>0.90</td>
<td>0.00</td>
</tr>
<tr>
<td>1989</td>
<td>0.00</td>
<td>0.00</td>
<td>0.90</td>
<td>0.00</td>
</tr>
<tr>
<td>1990</td>
<td>4.44</td>
<td>1.37</td>
<td>0.90</td>
<td>0.00</td>
</tr>
<tr>
<td>1991</td>
<td>8.64</td>
<td>1.70</td>
<td>0.90</td>
<td>0.00</td>
</tr>
<tr>
<td>1992</td>
<td>11.28</td>
<td>2.13</td>
<td>0.90</td>
<td>0.00</td>
</tr>
<tr>
<td>1993</td>
<td>16.13</td>
<td>2.65</td>
<td>0.90</td>
<td>0.00</td>
</tr>
<tr>
<td>1994</td>
<td>18.02</td>
<td>2.15</td>
<td>0.90</td>
<td>0.00</td>
</tr>
<tr>
<td>1995</td>
<td>21.13</td>
<td>2.15</td>
<td>0.90</td>
<td>0.00</td>
</tr>
<tr>
<td>1996</td>
<td>22.02</td>
<td>2.15</td>
<td>0.90</td>
<td>0.00</td>
</tr>
</tbody>
</table>

- Commercial banks are bigger players in debt underwriting compared with equity underwriting.

Commercial banks as underwriters

- In theory there are pros and cons for commercial banks underwriting, particularly in debt securities.

**Pros:**
- Will increase the number of players, increase competition and reduce the cost of underwriting.
- Commercial banks already have information about the issuing firm from historical lending relations. The banks certification of the offering will be more meaningful to investors and thus reduce borrowing cost to the issuing firm.

**Cons:**
- Commercial banks because of their size and informational advantages can monopolize the market.
- May have a conflict of interest with investors, if banks underwrite debt that will be used to repay, or be subordinated to, their own claims.
Commercial banks as underwriters

In testing the impact of commercial banks on debt underwriting, researchers focus on two effects:

- Competitiveness
  - Impact on underwriting spreads.

- Information
  - Impact in yield spread.

Table 1. Variable means for the full sample and the sub-samples of Section 20 and investment bank underwriters and $P$-value results

<table>
<thead>
<tr>
<th>Variables</th>
<th>All underwriters</th>
<th>Section 20</th>
<th>Non-Section 20</th>
<th>Difference</th>
<th>$P$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of issues</td>
<td>1362</td>
<td>321</td>
<td>1041</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROSS SPREAD (%)</td>
<td>0.92</td>
<td>0.84</td>
<td>0.94</td>
<td>0.024</td>
<td></td>
</tr>
<tr>
<td>YIELD SPREAD (bps)</td>
<td>130.12</td>
<td>129.28</td>
<td>130.38</td>
<td>0.891</td>
<td></td>
</tr>
<tr>
<td>ISSUE AMOUNT ($)</td>
<td>176.85</td>
<td>113.88</td>
<td>196.27</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>FILE AMOUNT ($)</td>
<td>933.01</td>
<td>727.66</td>
<td>996.34</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>MATURITY (yrs.)</td>
<td>14.40</td>
<td>11.30</td>
<td>15.36</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>MTNs (%)</td>
<td>22.19</td>
<td>38.94</td>
<td>16.91</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>SENIOR (%)</td>
<td>98.23</td>
<td>94.39</td>
<td>95.49</td>
<td>0.473</td>
<td></td>
</tr>
<tr>
<td>INVEST GRADE (%)</td>
<td>82.09</td>
<td>83.80</td>
<td>81.56</td>
<td>0.360</td>
<td></td>
</tr>
<tr>
<td>SMALL ISSUERS (%)</td>
<td>29.88</td>
<td>30.22</td>
<td>29.78</td>
<td>0.881</td>
<td></td>
</tr>
<tr>
<td>LARGE ISSUERS (%)</td>
<td>39.21</td>
<td>36.76</td>
<td>39.96</td>
<td>0.305</td>
<td></td>
</tr>
<tr>
<td>REPUTATION (%)</td>
<td>11.15</td>
<td>5.07</td>
<td>13.01</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

Underwriting spread (gross spread) is lower for section 20 subs.
Yield spread is similar
Table 3. Estimation results for gross spread: Extended specification model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Equation</th>
<th>( \text{A} )</th>
<th></th>
<th>( \text{B} )</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Coeff.</td>
<td>( P )-value</td>
<td>Coeff.</td>
<td>( P )-value</td>
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<tr>
<td>CONSTANT</td>
<td></td>
<td>0.916</td>
<td>0.000</td>
<td>0.861</td>
<td>0.000</td>
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<tr>
<td>SECTION</td>
<td></td>
<td>-0.082</td>
<td>0.004</td>
<td>-0.007</td>
<td>0.893</td>
</tr>
<tr>
<td>LN(SMKT)</td>
<td></td>
<td>0.005</td>
<td>0.365</td>
<td>-0.007</td>
<td>0.172</td>
</tr>
<tr>
<td>LN(STAKE)</td>
<td></td>
<td>-0.008</td>
<td>0.759</td>
<td>-0.006</td>
<td>0.815</td>
</tr>
<tr>
<td>EXCHANGE</td>
<td></td>
<td>-0.041</td>
<td>0.001</td>
<td>-0.039</td>
<td>0.001</td>
</tr>
<tr>
<td>LN(ISSUE)</td>
<td></td>
<td>0.006</td>
<td>0.559</td>
<td>0.008</td>
<td>0.421</td>
</tr>
<tr>
<td>MTN</td>
<td></td>
<td>-0.076</td>
<td>0.027</td>
<td>-0.074</td>
<td>0.032</td>
</tr>
<tr>
<td>SHELF</td>
<td></td>
<td>-0.206</td>
<td>0.000</td>
<td>-0.208</td>
<td>0.000</td>
</tr>
<tr>
<td>REFINANCE</td>
<td></td>
<td>-0.026</td>
<td>0.277</td>
<td>-0.024</td>
<td>0.302</td>
</tr>
<tr>
<td>SENIOR</td>
<td></td>
<td>-0.230</td>
<td>0.006</td>
<td>-0.226</td>
<td>0.007</td>
</tr>
<tr>
<td>Aa</td>
<td></td>
<td>0.085</td>
<td>0.416</td>
<td>0.113</td>
<td>0.312</td>
</tr>
<tr>
<td>A</td>
<td></td>
<td>0.077</td>
<td>0.455</td>
<td>0.104</td>
<td>0.348</td>
</tr>
<tr>
<td>Baa</td>
<td></td>
<td>0.093</td>
<td>0.372</td>
<td>0.117</td>
<td>0.293</td>
</tr>
<tr>
<td>Ba</td>
<td></td>
<td>0.892</td>
<td>0.000</td>
<td>0.916</td>
<td>0.000</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>1.919</td>
<td>0.000</td>
<td>1.949</td>
<td>0.000</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>2.026</td>
<td>0.000</td>
<td>2.041</td>
<td>0.000</td>
</tr>
<tr>
<td>REP</td>
<td></td>
<td>-0.004</td>
<td>0.001</td>
<td>-0.003</td>
<td>0.011</td>
</tr>
<tr>
<td>LN(MAT)</td>
<td></td>
<td>0.180</td>
<td>0.000</td>
<td>0.181</td>
<td>0.000</td>
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<tr>
<td>FRBSHIFT</td>
<td></td>
<td>0.003</td>
<td>0.846</td>
<td>0.000</td>
<td>0.984</td>
</tr>
</tbody>
</table>

Observations: 1362
Adjusted \( R^2 \): 0.8348

Results on gross spread withstand a multivariate regression

Project Financing

- A stand alone venture
- A sponsor contributes equity and technical expertise, for example:
  - Disney in a new Project finance theme park (Paris)
  - BP in North Sea exploration
- Debt is main source of financing (about 80% on average).
- Borrow no recourse or limited recourse loans.
  - This is critical for project financing because it de-links the financing of the new project from the "balance sheet" of the sponsor. There is little risk to the sponsor that default in the project carry give debtholders claim against the assets of the project.
  - This no recourse also applies to the debt of sponsor. Creditors of the sponsor do not have claim on the assets of the project (only to the equity or debt investment the sponsor made in the project).
Project Financing

- The project is often rated.
- Debt is supplied by:
  - Banks
  - Syndicated loans
  - Public bonds
  - Private placement
  - Special project finance firms
  - Investment banks
- The project revenues are used to pay the debt.
- Project financing are common in:
  - infrastructure projects
  - power
  - oil and gas
  - plant construction
  - international projects

Syndicated bank loans

- Unites a group of banks under a common set of documents for the purpose of providing credit to a borrower.
- Member banks share funding, repayments and fees on a pro rata basis according to their original commitments.
- One bank acts as an administrative agent to keep track of payments, distribution of cash, monitoring and contacts with the borrower.
Syndicated bank loans
Fee structure

- Repayment to the lending banks comes in several forms:
  - Underwriting + commitment fee
    - Upfront fee that is paid at closing.
    - Usually in the range of 50-150 bp
    - Get split unevenly between the syndicate group with the lead arranger(s) taking the lion share.
  - Periodical interest payments

- Underwriting contract can be either:
  - Fully underwritten
  - Best effort.

Syndicated bank loans
The syndicate

- There are several tears in the syndicate group:
  1. Lead arranger(s) - one or more banks that advise the firm on the process, prepare the offering and loan documents, and share the capital risk in fully-underwritten offers. Get selected by the firm.
  2. Sub-underwriter – often are selected by the lead arranger. Commit a large amount to the loan and share the capital risk in fully underwritten offers.
  3. Arrangers – several tears of banks that commit smaller amounts to the syndicate. Share only the commitment fee portion of the underwriting fee.
Syndicated bank loans

- Advantages of syndicated loans:
  - Allows lead arrangers (usually a large multinational bank) to benefit from their ability to find and screen borrowers.
  - Give smaller regional banks that have access deposits in the local markets, access to loans with low search and monitoring cost.
  - Simplifies the borrowing process for the firm by dealing with few lead arranger and one loan document while actually borrowing from multiple banks.

Securitization

- Securitization is the packaging of non-traded financial securities into a newly created traded financial security. For example:
  - Asset back securities (mortgage backs)
  - Collateralized debt obligations (CDO)
- The new security is traded with the assistance of the broker/dealer who bring together buyers and sellers and create markets.
- Securitized loans are often called “pass through securities” because they cash flows from the underlying pool are passed through the final investor.
Mortgage back securities (MBS)

- The first and largest market for securitized assets was in mortgages.
  - Large availability of loans
  - Easy to evaluate the cash-flow
  - Helped by government (or agency) subsidy that guarantees the credit risk of a mortgage pool. And tax advantages.

- First large deal was in 1983, a $1 billion CMO offered by Freddie Mac.
  - CMOs divided the cash-flow from the pool into different maturity classes (ranches) and offer different risk-return tradeoff.

- In general MBS have two sources of risk:
  - Interest rate risk
  - Prepayment risk (early payment by homeowners that often occurs as interest rates drop and loans are refinanced.)

Valuation Review
Valuation
Discounted Cash Flow

General formula

The value of every asset is the present value of all cash flows it will generate:

\[ NPV = \sum_{i=0}^{\infty} \frac{C_i}{1 + R_{0\text{ to } i}} \]

- \( C_i \) - cash flow at the end of period \( i \).
- \( R_{0\text{ to } i} \) - cumulative interest rate from the present until period \( i \).
If we assume that the periodic interest rate is constant over time and equal to \( r \), (i.e. flat yield curve) then:

\[
NPV = \sum_{i=0}^{\infty} \frac{C_i}{(1 + r)^i}
\]

This (brut force) formula can have infinite number of terms. If we assume some pattern in cash flow then we may use some “shortcut formulas”.

**Perpetuity**

A fixed payment of \( C \) paid at the end of each period forever:

\[
PV = \frac{C}{r}
\]

Where:

\( C \) - fixed periodic payment.

\( r \) - is the periodic interest rate.
Perpetuity Continue

Example:

- Annual payment of $100 starting at year end and continuing forever.
- Annual interest rate is 10%.
- Present value of payment stream.

\[
PV = \frac{100}{0.1} = 1000
\]

Perpetuity is useful in valuing:

- Preferred stock
- Consul bonds
- How about common stock (or the entire firm)?
  - Common stock is a perpetual security.
  - But the cash flow to shareholder tends to grow over time.
Growing Perpetuity

Same as in regular perpetuity only the periodic payment grows at a rate of $g$ per year.

$$PV = \frac{C}{r - g}$$

Example: same as in part perpetuity only now the payment grows at a rate of 5% per-year

$$PV = \frac{100}{0.1 - 0.05} = 2000$$

Growing Perpetuity continue

- Growing perpetuity is useful in valuing the terminal value of a common stock.
- If we are valuing high growth firms is it possible to have $g > r$?
  - Absolutely not!!!
    - Perpetual growth is similar to all companies (new economy or old economy after all in the far future they will all be old).
    - Perpetual growth range is 2%-6%.
      - Inflation
      - Real growth (population growth, productivity growth).
Annuity

Present value of a stream of $n$ payments of $C$, paid at period end, when the periodic interest rate is $r$.

\[
P V = \frac{C}{r} - \frac{C}{r} \times \frac{1}{(1+r)^n}
\]

Example: $C=100$, $n=5$, $r=10\%$

\[
P V = 1000 - 1000 \times \frac{1}{1.1^5} = 379.08
\]

Annuity Continue...

- Annuity is useful in valuing:
  - Bonds (coupon payments).
  - How about common stock?
    - Not as much. Cash flow to shareholders tends to grow over time.
- Derive the annuity formula…
Growing Annuity

Present value of a stream of \( n \) payments that grows at a rate of \( g \) per year (where first payment is \( C \)).

\[
PV = \frac{C}{r-g} - \frac{C}{r-g} \left( \frac{1+g}{1+r} \right)^n
\]

Example: \( C=100, n=5, r=10\%, g=5\% \), therefore:

\[
PV = 2000 - 2000 \times \frac{1.05}{1.1}^5 = 415.06
\]

Growing Annuity continue...

- Growing annuity is useful in valuing stages of a firm’s cash flow evolution.
- If we are valuing high growth firms is it possible to have \( g > r \)?
  - Yes!!
    - There is no limit on growth over limited numbers of years.
Beginning of the period adjustment

Both the annuity and the perpetuity are based on payments made at the end of the period. If the first payment is made at the beginning of the period we must make the following adjustment:

\[ PV_{\text{begin}} = PV_{\text{end}} \times (1 + r) \]

Examples

The impact of discounting
Risk and Return

- Investors are risk averse and want compensation for risk.
- Historically risky securities yield higher return on average:
  Return on stocks > return on corporate bonds > return on government bonds > return on treasuries.
- Average return changes over time (inflation).
  Better to assume constant risk premium.
- Risk is measured usually by the standard deviation of the return on the portfolio.

<table>
<thead>
<tr>
<th>Series</th>
<th>Arithmetic Mean</th>
<th>Risk Premium</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Stock</td>
<td>13.3%</td>
<td>9.5%</td>
<td>20.3%</td>
</tr>
<tr>
<td>Small company common stock</td>
<td>17.7%</td>
<td>13.9%</td>
<td>33.9%</td>
</tr>
<tr>
<td>Long term Corporate bonds</td>
<td>6.1%</td>
<td>2.3%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Long term government bonds</td>
<td>5.6%</td>
<td>1.8%</td>
<td>9.2%</td>
</tr>
<tr>
<td>Intermediate term government bonds</td>
<td>5.4%</td>
<td>1.6%</td>
<td>5.7%</td>
</tr>
<tr>
<td>US treasury bills</td>
<td>3.8%</td>
<td></td>
<td>3.2%</td>
</tr>
<tr>
<td>Inflation</td>
<td>3.2%</td>
<td></td>
<td>4.5%</td>
</tr>
</tbody>
</table>
Risk and Return

Risk and Return continue...

Diversification reduces risk!

- Risk that can be diversified – Unique.
- Risk that can not be diversified - Market risk.

Market risk is measured by

- Expected percentage return of security given a market return of 1%.
- Higher implies a higher expected return and higher risk.

\[ \beta_i = \frac{E(r_i - \bar{r})}{\sigma_i} \]

The Sharpe Model

- \( E(r) \) - Expected return on asset
- \( r_f \) - Expected risk free rate
- \( E(r_m) \) - Expected return on the market

\[ E_i = E(r_i) - E(r_f) \]

Risk and Return continue...

Higher risk.

Market risk is measured by

- Given a market return of 1%
- Higher implies a higher expected return and higher risk.
- Expected percentage return of security

\[ \beta_i = \frac{E(r_i - \bar{r})}{\sigma_i} \]

Diversification reduces risk!
The Sharpe Model

- The \( \beta \) of a portfolio:

\[
\beta_p = \sum_{i=1}^{n} w_i \beta_i
\]

Estimating the risk premium \((E[r_m] - r_f)\)

- What is the risk free rate?
  - The treasury bill rate.
  - The 10 year government bond yield**.
  - The 30 year government bond yield.

- The period estimating the premium.
  - If use 1926-1999 find higher risk premium**.
  - If use 1962-1999 find lower risk premium.

- Arithmetic or Geometric average.
  - Arithmetic average yields higher premium it is correct for independent draws.
Estimating the risk premium \((E[r_*] - r_f)\)

- Historically the risk premium in the U.S is among the highest in the world (because the US stock market performed so well). Should we use a world average?

- MY recommendation:
  - For risk free rate \(r_f\) use 10 year yield.
  - For market risk premium use \(E[r_*] - r_f = 5.5\%\)

Weighted Average Cost of Capital (WACC)

\[
WACC = \frac{B}{B+P+S}r_B(1-tax) + \frac{P}{B+P+S}r_p + \frac{S}{B+P+S}r_s
\]

- \(B,P,S\) - is the market value of debt, preferred stock, and common stock respectively.
- \(r_B, r_p, r_s\) is the cost of debt, preferred stock, and common stock respectively.
- Tax is the firm’s marginal tax rate.
Cost of equity

- Cost of equity: \( r_s = r_f + \beta_s (E[r_m] - r_f) \)
- Estimate for \( \beta_s \)
  - Regression \( r_{s,t} = \alpha + \beta_s r_{m,t} + \epsilon_t \)
    - Can use daily weekly or monthly returns.
  - Beta is available from Bloomberg, BARRA, Yahoo and more.
- Use industry average, particularly when firm returns are not available.
- Example: Beta for internet stocks (Excel).

Cost of Debt

- Cost of debt \( r_B \) is affected by:
  - Current risk free rate (Prime rate).
  - Firm default risk.
  - Current yield curve slope.
  - Duration of firm debt.
- Should be estimated based on firm specific credit rating, or yield on traded bonds.
Cost of debt

- Cost of debt when debt has different maturities:
  \[ r_B = \frac{S.T.B}{B} r_{STB} + \frac{L.T.B}{B} r_{LTB} \]
  - Where: STB is short term debt, and LTB is long term debt.
  - Do not use \( \frac{\text{Interest}}{\text{Debt}} \)

Enterprise, Equity Value

- Enterprise value = market value of the entire asset base of the firm.
  - It is equal to the value of the firm’s capital or equity + debt
- Equity value = Enterprise value - liabilities.
- Some of valuation methods find the firm’s equity value directly while others find Enterprise value.
Discounted cash flow with financing

1. Adjusted present value (APV)
   Firm value = PV (UCF) = PV (financing effects)
   Discount rate - \( r_u \) cost of capital of unlevered firm

2. Flow-to-Equity
   Cash flow to equity holders (After debt service payments) Discount rate - \( r_e \) cost of equity.

3. WACC Method
   - Use cash flow for unlevered firm.
   - Discount rate - WACC adjusted for taxes.

\[
WACC = \frac{B}{B+S} r_s (1-tax) + \frac{S}{B+S} r_s
\]
Discounted Cash Flow (DCF)

Helpful formulas

1. Cash flow estimation

- Forecast cash flows (and its components) for each year over the forecast horizon period.
  - The forecast period should be longer for younger, higher growth firms.

\[
CF = Sales \times Operating\ margins \times (1 - tax\ rate) + \text{Depreciation} - \text{Capital expenditures} - \text{Increase in WC} + \text{one time CF items}
\]
Cash flow estimation continue...

- Base your sales forecast:
  - Industry growth projections.
  - Historical growth rate (excluding M&A and divestitures).
  - Analysts forecast for long term growth in EPS.
  - Value line forecast for sales growth.
  - Individual adjustments for growth.

- Operating margins is defined as $\frac{EBIT}{Sales}$
  - Use historical profitability as benchmark and adjust for changes.

- Do not subtract interest expense for tax calculation.

Cash flow estimation continue...

- Capital expenditures
  - Use long term average of industry $CAPEX/sales$ as benchmark
  - Beware of rapidly changing levels of capital expenditures for individual firms.
  - Adjust level of $CAPEX$ for changes in sales growth. High growth firms usually spend more as a fraction of sales.
  - In the long run $CAPEX$ is only slightly greater than depreciation.

- Change in working capital.
  - Estimate working capital based on $WC/sales$ for the industry over several years.
  - The cash flow every year is a fraction of the growth in sales.
2. Terminal value

- Terminal value is the value of the firm that is generated from operating from year \( n+1 \) to infinity. Estimate terminal value (TV) as:

\[
TV = \frac{CF(n+1)}{WACC - g_2} \times \frac{1}{(1+WACC)^n}
\]

- \( g_2 \) is the terminal growth rate (in the range of 2%-6%)
- \( CF(n+1) \) includes adjustments for changing growth rates (for example lower CAPEX).
- For some firms we may need to adjust WACC.
  - Particularly in high growth high beta industries (internet) that will have a lower beta at maturity.

3. Enterprise value

**Enterprise value** = PV of cash flow from the present through year \( n \) + terminal value + PV non-operating assets.

- Non-operating assets generally include
  - Cash and marketable securities.
  - Real estate assets not used to generate income.
  - Over funded pension plan.
  - Market Value equity investment subsidiary.
4. Equity value/Stock price

**Equity value** = Enterprise value - debt - potential liabilities - minority interest

**Common Stock price** = (Equity value - value preferred stock - value of outstanding stock options or warrants) / shares outstanding
- We also need to account for employee stock options that will be issued in the future.

Relative valuation

Multiples
Multiples vs. DCF

- DCF is the best way of valuing firms however it requires making many projections and assumptions that we may not be comfortable with.
  - Assumptions about growth, cost, risk, WACC ...
  - It is time consuming to perform a DCF.
  - The results of the DCF can be vastly different from market prices and it is hard to know why.
  - The first instinct is to trust the market.

Multiples vs. DCF continue...

- Using multiples allows us to value the company without the need for difficult forecasting.
- We use the knowledge and forecasts of all investors by looking at the way they value similar companies and applying to firm we are trying to value.
Multiples, Implicit assumptions

- Markets are efficient and correctly price the comparable firms.
  - If you believe that the internet industry is over (or under) valued then multiples will give you the wrong value.
  - When using multiples to value public companies we make the (inconsistent assumption) that the market is correct in valuing our peers, but may be wrong in valuing the our firm.

Multiples, Implicit assumptions

Continue...

- There is a direct link between a company fundamental and its value.
  - Commonly used fundamental multiples are sales, EBITDA, assets, EPS
- Similar firms have the same link (multiple) between fundamental and value.
  - Different multiples give different valuation. Its hard to know which one is right.
- The company we are valuing and the comparable firm(s) have identical future growth, risk, profitability.
Multiples implementation

1. Estimate the ratio \( \frac{\text{value}}{\text{fundamental}} \) for comparable firms.
   - The \( \text{value} \) measure can be Equity value or Enterprise value depending on the multiple.
   - The multiple can be estimated using:
     - Mean or median of the industry.
     - One or two very similar companies.
   - Beware of multi-industry firms.

2. Firm value is: \( \text{firm fundamental} \times \text{multiple} \)

Revenue multiples

- Estimate the multiple \( \frac{\text{Enterprise value}}{\text{sales}} \)
  - Use enterprise value because the revenues are generate from the entire asset base of the firm, not just equity.
  - Enterprise value = market value of equity + preferred + debt – PV non-operating assets.
- Enterprise value = Revenues * Revenue multiple
- Equity value = Enterprise value - preferred - debt + PV non-operating assets
Revenue multiples continue…

- Advantages:
  - Available to most firms.
  - Easy to use.
  - Gives us a good “ball-park” value.

- Disadvantages:
  - Ignores profitability. Thus it tends to reward (overvalue) less efficient firms.
  - Ignores differences between the firm’s growth or risk and its industry. It will reward (overvalue) firms with lower growth and higher risk compared with their industry.

Asset multiples

- Estimate one of the following multiples:

\[
\frac{\text{Enterprise value}}{\text{book assets}} \quad \text{or} \quad \frac{\text{Equity value}}{\text{book equity}}
\]

- Enterprise value = market value of equity + preferred + debt – PV non-operating assets.

- Enterprise value = Book assets * book asset multiple
- Equity value = Book equity * book equity multiple
Asset multiples continue...

- Asset multiples suffer from all the flaws of revenue multiple and from accounting problems in estimating assets.
  - Commonly used in the valuation of financial firms.
  - Poor valuation measure for high-tech and internet firms because the accounting assets do not include the “intangibles” and R&D.

Cash-flow (EBITDA) multiple

- Estimate the multiple \( \frac{\text{Enterprise value}}{\text{EBITDA}} \)
  - Use enterprise value because the operating cash flow (EBITDA) is generated from the entire asset base of the firm, not just equity.
  - Enterprise value = market value of equity + preferred + debt – PV non-operating assets.
- Enterprise value = EBITDA * EBITDA multiple
- Equity value = Enterprise value - preferred - debt + PV non-operating assets
**EBITDA multiple continue…**

- **Advantages:**
  - Incorporates profitability!
    - into the valuation. For most industries it is the most accurate and commonly used multiple.
  - Easy to use.
  - Gives us a good “ball-park” value.

- **Disadvantages:**
  - It is not available if a firm or its comparables have negative EBITDA.
  - Ignores differences between the firm’s growth or risk and its industry. It will reward (overvalue) firms with lower growth and higher risk compared with their industry.

**EPS multiple**

- Estimate the PE multiple \( \frac{Share \ price}{EPS} \)

- Stock price = EPS * PE multiple

- **Advantages:**
  - Incorporated the firm’s profitability into the valuation.
  - Finds stock price directly

- **Disadvantages:**
  - Can be influenced by accounting methods and transitory earning
  - Not defined for firm’s with negative EPS.
Industry specific multiples

In addition to the general fundamental multiples there are multiples that are specific to a particular industry and are widely used to value firms in that industry. For example:

- For cable companies - Value per subscriber
- For hospital operators – Value per bed
Asset management

Managing financial assets for institution and individuals is an important business for investment banks. To this effect they offer:

- Mutual funds for individuals
- Private wealth management for individuals
- Institutional money management
- Hedge funds private equity funds and other type of investment vehicles.

Investment banks are actively involved in all parts of the asset management business with growth in assets under management coming from internal growth as well as acquisitions.

Financial intermediaries which pool funds to buy assets provide several advantages:

- Record keeping and administration
- Diversification
- Professional management
- Lower transaction costs
- Pass trough tax advantages.
Mutual Funds, Investment Companies

- Mutual funds, or investment companies, direct the savings of individual investors into bonds, stocks, and money market securities.
- A small saver who buys mutual fund shares gains opportunities for capital gains and indirect access to higher yielding securities that can be purchased only in large blocks, and yet still enjoys price stability, low risk, and high liquidity.
- Investment companies have a favorable tax situation – they pay no federal taxes on income generated by their security holdings, provided their earnings flow through to their customers.

Types of Investment Companies
Unmanaged

- Unit investment trusts
  - Portfolio ‘fixed’ for life of fund
  - Unmanaged
  - Most fixed income securities (tax exempt)
- Exchange traded funds
  - A fund with securities that exactly match an index.
  - Trade on the exchanges (mostly on AMEX) throughout the day.
  - Low management fee (10-20 bp on the main indexes)
  - Spider (S&P 500), QQQ (NASDAQ 100), Diamonds (Dow) and many others on sector.
  - Allow arbitrage.
Types of Investment Companies

Managed

- Open-end funds ('mutual funds')
  - Redeem or issue shares at NAV
  - Number of shares outstanding varies
  - Many carry a 'load' or sales charge in addition to management fee.
- Closed-end funds
  - Do not redeem or issue shares when investors sell.
  - Trade on exchanges through the day.
  - Usually sell at discount to NAV.
  - Pay management fee to management company (50-200 bp)
- Real estate investment trust (REIT)
  - Similar to closed-end fund
  - Invests in real estate directly or in mortgage & construction loans
  - Income usually passed through to investor
- Hedge Funds

Mutual Fund

- There are more than 6000 mutual funds.
- Most mutual funds are managed externally.
- Most funds are part of “families”
  - About 450 “families”
  - Fidelity has about 150 funds under the management of FMR.
- Most of the large securities firms offer a family of funds.
- Mutual funds are heavily regulated
  - (Investment advisor act of 1940, Investment company act of 1940 and more)
  - Regulation restricts a fund’s investment ability.
    - No or limited shorting
    - No or limited use of derivatives
    - Restricts investment to fund’s objective.
Mutual Funds

- Buy and sell
  - Through the fund company
  - Through brokers, just like you buy any stocks
- Fund rating is the evaluation of a fund performance.
  - Morningstar:
    - Best Fund = ⭐⭐⭐⭐⭐
    - Worst Fund = ⭐
- Mutual Funds do not trade throughout the day like stocks.
- Investors can place orders during the day but purchases are not complete until the market closes and NAV is calculated

Mutual Fund Types

- Money market funds
- Equity funds
  - Growth Vs. Income
  - Large cap vs. Small cap
  - Specialized sector funds
- Fixed income
  - Government (Various maturities)
  - Corporate (investment grade and high yield)
  - Mortgage back
- Asset allocation funds
  - Try to allocate between classes of assets
- Index funds
Mutual Fund Costs (Revenue)

- **Front-end load - sales charge on purchase**
  - Maximum of 8.5% of investment
- **Back-end load - exit fee,**
  - Usually declining in holding period
- **Operating expenses - admin. & Advisor**
  - Usually .2% to 2%
  - Reduce value of portfolio
  - Higher fees of equity and higher risk assets
- **12b-1 charges**
  - Marketing costs and commissions
  - Paid annually; Like operating expenses
  - Maximum of 0.75% of fund’s assets

Mutual Fund Returns

- **Reflect operating expenses & 12b-1 fees**
  - Do not reflect ‘loads’
- \[ R = \frac{(NAV_1 - NAV_0 + \text{Distributions})}{NAV_0} \]
- **Expenses reduce NAV**
  - Investor has to be careful
- **Taxes**
  - Income/gains passed through
  - Function of ‘turnover’
Mutual Fund growth

By the end of 2001 there were over $4 trillion in MF assets in the US
- There are about $8 Trillion in MF assets worldwide and over 12,000 funds.

About a third Mutual fund assets are linked to firm sponsored retirement funds.

<table>
<thead>
<tr>
<th>Mutual Funds</th>
<th>- Open-end investment companies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Billions of dollars; amounts outstanding end of period, not seasonally adjusted</td>
</tr>
<tr>
<td>1 Total financial assets</td>
<td>17.0</td>
</tr>
<tr>
<td>2 Security REPs</td>
<td>0.2</td>
</tr>
<tr>
<td>3 Credit market instruments</td>
<td>2.0</td>
</tr>
<tr>
<td>4 Open market paper</td>
<td>0.2</td>
</tr>
<tr>
<td>5 U.S. government securities</td>
<td>0.6</td>
</tr>
<tr>
<td>6 Treasury</td>
<td>0.6</td>
</tr>
<tr>
<td>7 Agency</td>
<td>0.0</td>
</tr>
<tr>
<td>8 Municipal securities</td>
<td>0.0</td>
</tr>
<tr>
<td>9 Corporate and foreign bonds</td>
<td>1.2</td>
</tr>
<tr>
<td>10 Corporate equities</td>
<td>14.8</td>
</tr>
<tr>
<td>11 Miscellaneous assets</td>
<td>0.0</td>
</tr>
<tr>
<td>12 Total shares outstanding (liabilities)</td>
<td>17.0</td>
</tr>
</tbody>
</table>
Pension Funds

- *Pension funds* protect individuals and families against loss of income in their retirement years by allowing workers to set aside and invest a portion of their current income.

Pension Funds

- *Defined benefit plans* promise a specific monthly or annual payment to workers when they retire based upon the size of their salary during their working years and their length of employment.

- Such programs have the advantage of guaranteed income, but an employee who leaves early or is dismissed before retirement may get little or nothing.
Pension Funds

- **Defined contribution plans** specify how much must be contributed each year in the name of each worker, but the amount to be received when retirement is reached will vary depending upon the amount saved and the returns earned on accumulated savings.

- The funds saved belong to the employee, and are portable.

Assets of Pension Funds

- Private Pension Funds
- Government Retirement Funds
- Total
**Private Pension Funds**

Billions of dollars; amounts outstanding end of period, not seasonally adjusted

<table>
<thead>
<tr>
<th></th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Total financial assets</td>
<td>4178.3</td>
<td>4615.4</td>
<td>4537.9</td>
<td>4161.5</td>
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<tr>
<td>2 Checkable deposits and currency</td>
<td>5.7</td>
<td>6.6</td>
<td>7.2</td>
<td>7.9</td>
</tr>
<tr>
<td>3 Time and savings deposits</td>
<td>147.7</td>
<td>144.7</td>
<td>147.1</td>
<td>144.0</td>
</tr>
<tr>
<td>4 Money market fund shares</td>
<td>63.4</td>
<td>75.1</td>
<td>81.0</td>
<td>90.0</td>
</tr>
<tr>
<td>5 Security RPs</td>
<td>28.8</td>
<td>28.6</td>
<td>29.6</td>
<td>29.7</td>
</tr>
<tr>
<td>6 Credit market instruments</td>
<td>651.8</td>
<td>677.2</td>
<td>717.1</td>
<td>735.0</td>
</tr>
<tr>
<td>7 Open market paper</td>
<td>34.3</td>
<td>37.5</td>
<td>35.8</td>
<td>34.5</td>
</tr>
<tr>
<td>8 U.S. government securities</td>
<td>307.3</td>
<td>318.3</td>
<td>343.6</td>
<td>341.7</td>
</tr>
<tr>
<td>9 Treasury</td>
<td>112.5</td>
<td>112.1</td>
<td>131.8</td>
<td>102.4</td>
</tr>
<tr>
<td>10 Agency</td>
<td>194.8</td>
<td>206.1</td>
<td>231.7</td>
<td>239.3</td>
</tr>
<tr>
<td>11 Corporate and foreign bonds</td>
<td>300.9</td>
<td>310.5</td>
<td>325.5</td>
<td>345.5</td>
</tr>
<tr>
<td>12 Mortgages</td>
<td>9.3</td>
<td>10.9</td>
<td>12.2</td>
<td>13.4</td>
</tr>
<tr>
<td>13 Corporate equities</td>
<td>1990.7</td>
<td>2352.7</td>
<td>2195.1</td>
<td>1902.3</td>
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<tr>
<td>14 Mutual fund shares</td>
<td>668.2</td>
<td>755.8</td>
<td>753.6</td>
<td>696.7</td>
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<tr>
<td>15 Miscellaneous assets</td>
<td>622.2</td>
<td>633.7</td>
<td>627.3</td>
<td>613.8</td>
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<tr>
<td>16 Unallocated insurance contracts</td>
<td>384.6</td>
<td>393.5</td>
<td>378.4</td>
<td>363.4</td>
</tr>
<tr>
<td>17 Contributions receivable</td>
<td>118.6</td>
<td>116.1</td>
<td>117.4</td>
<td>118.6</td>
</tr>
<tr>
<td>18 Other</td>
<td>122.7</td>
<td>124.1</td>
<td>131.6</td>
<td>131.7</td>
</tr>
<tr>
<td>19 Pension fund reserves (liabilities)</td>
<td>4223.5</td>
<td>4792.9</td>
<td>4598.9</td>
<td>4226.3</td>
</tr>
</tbody>
</table>

**State and Local Government Employee Retirement Funds**

Billions of dollars; amounts outstanding end of period, not seasonally adjusted

<table>
<thead>
<tr>
<th></th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Total financial assets</td>
<td>2054.1</td>
<td>2226.8</td>
<td>2289.6</td>
<td>2176.7</td>
</tr>
<tr>
<td>2 Checkable deposits and currency</td>
<td>10.0</td>
<td>9.2</td>
<td>9.1</td>
<td>12.0</td>
</tr>
<tr>
<td>3 Time and savings deposits</td>
<td>2.0</td>
<td>1.7</td>
<td>1.1</td>
<td>2.0</td>
</tr>
<tr>
<td>4 Security RPs</td>
<td>37.5</td>
<td>40.4</td>
<td>44.7</td>
<td>45.5</td>
</tr>
<tr>
<td>5 Credit market instruments</td>
<td>704.6</td>
<td>751.4</td>
<td>806.0</td>
<td>790.9</td>
</tr>
<tr>
<td>6 Open market paper</td>
<td>37.5</td>
<td>40.4</td>
<td>44.7</td>
<td>48.0</td>
</tr>
<tr>
<td>7 U.S. government securities</td>
<td>380.4</td>
<td>376.4</td>
<td>398.5</td>
<td>374.0</td>
</tr>
<tr>
<td>8 Treasury</td>
<td>217.7</td>
<td>211.2</td>
<td>195.7</td>
<td>186.0</td>
</tr>
<tr>
<td>9 Agency</td>
<td>142.4</td>
<td>165.3</td>
<td>202.8</td>
<td>188.0</td>
</tr>
<tr>
<td>10 Municipal securities</td>
<td>3.3</td>
<td>3.0</td>
<td>1.6</td>
<td>1.0</td>
</tr>
<tr>
<td>11 Corporate and foreign bonds</td>
<td>279.6</td>
<td>310.0</td>
<td>339.7</td>
<td>343.0</td>
</tr>
<tr>
<td>12 Mortgages</td>
<td>24.1</td>
<td>21.5</td>
<td>21.5</td>
<td>24.9</td>
</tr>
<tr>
<td>13 Corporate equities</td>
<td>1233.9</td>
<td>1343.2</td>
<td>1335.1</td>
<td>1215.7</td>
</tr>
<tr>
<td>14 Miscellaneous assets</td>
<td>66.1</td>
<td>81.0</td>
<td>93.5</td>
<td>110.6</td>
</tr>
<tr>
<td>15 Pension fund reserves (liabilities)</td>
<td>2085.4</td>
<td>2262.3</td>
<td>2331.5</td>
<td>2223.6</td>
</tr>
</tbody>
</table>
Pension Funds

- Pension funds are long-term investors with limited need for liquidity.
- Their incoming cash receipts are known with considerable accuracy, and their cash outflows are not difficult to forecast.
- However, the pension fund industry is closely regulated in all its activities.

There appear to be serious problems ahead for both the growth and stability of pension plans.
- The rising proportion of pension beneficiaries to working contributors, related to the aging of the population.
- The increasing cost of maintaining pension programs, especially defined benefit plans.
- The rising cost of government regulation with respect to reporting requirements and employee rights.
Hedge Funds

- Hedge funds are unregistered investment pools bound by the investment agreement investors sign with the fund.
- Usually organized as limited partnerships
  - The General partner has discretion over the investment.
- Hedge funds are often organized off-shore to benefit non-US residence.
- Hedge funds employ many (non-traditional) investment strategies, often using leverage to enhance returns.
  - Offer investors return streams that mutual funds cannot offer.
- Hedge funds have limited disclosure rules most just report monthly return to their investors.

Prime brokers

- The back office services to hedge funds are provided by prime brokers (securities firms) for a fee. These services include:
  - Custody
  - Clearance
  - Security lending (short)
  - Financing for leveraged positions
  - Portfolio accounting
    - P&L in real time
    - Position balance
    - Wash sale report
  - Risk management reports.
Hedge fund fees

- The general partner collects fees in two forms:
  - Management fee 1%-2% of the assets
  - Incentive fee of 15%-25% of the fund’s annual profit.
    - *High water mark* – Funds with losses in previous years cannot collect incentive fees until the losses are recuperated.
    - *Preferred return* – a minimum level of return (t-bill rate or S&P return) that must be obtained before incentive fees are collected.

Hedge fund investors

- Can accept funds from unlimited number of qualified investors
  - individual with $5 mil in investments
  - individual with $25 mil in investments
- Up to 100 non-qualified investors
- Most hedge funds impose minimum investment
  - Mostly between $200,000-$500,000
- Most hedge fund require a minimum investment duration period of up to 3 years (lockup period).
Hedge fund investment style:
annual returns and volatility 1990-2001

<table>
<thead>
<tr>
<th></th>
<th>Net Return</th>
<th>Volatility</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Hedge Funds</td>
<td>14.80%</td>
<td>11.30%</td>
</tr>
<tr>
<td>Bond Arb</td>
<td>12.70%</td>
<td>18.60%</td>
</tr>
<tr>
<td>Convertible Arb</td>
<td>13.40%</td>
<td>9.20%</td>
</tr>
<tr>
<td>Distressed Securities</td>
<td>16.00%</td>
<td>9.90%</td>
</tr>
<tr>
<td>Long Bias</td>
<td>17.40%</td>
<td>18.50%</td>
</tr>
<tr>
<td>Macro Trading</td>
<td>11.30%</td>
<td>13.10%</td>
</tr>
<tr>
<td>Market Neutral</td>
<td>13.20%</td>
<td>6.40%</td>
</tr>
<tr>
<td>Merger Arb</td>
<td>14.50%</td>
<td>8.50%</td>
</tr>
<tr>
<td>Multi-Strat Arb</td>
<td>9.10%</td>
<td>8.80%</td>
</tr>
<tr>
<td>Short Bias</td>
<td>6.20%</td>
<td>13.50%</td>
</tr>
<tr>
<td>Stock Index Arb</td>
<td>14.30%</td>
<td>13.40%</td>
</tr>
<tr>
<td>Fund of Funds</td>
<td>11.10%</td>
<td>9.50%</td>
</tr>
<tr>
<td>S&amp;P 500</td>
<td>12.10%</td>
<td>14.60%</td>
</tr>
<tr>
<td>Bonds</td>
<td>7.90%</td>
<td>4.40%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley Quantitative Strategies

Proprietary trading

- Trading revenues have always been a main source of profits to investment banks.
- Advantages
  - Superior knowledge
  - Superior information
  - Low trading cost
  - Advanced technology
  - Access to order flow
  - Access to multiple financial markets
  - Top human capital talent
  - Ability to take risk
  - Advanced risk management systems
Proprietary trading

- Risks in proprietary trading
  - Trading losses can hurt reputation and ability to run other operations.
    - Cost of financial distress - barring bank
  - Conflict of interest.
    - Trade in the same securities as client
    - Advise clients on stock that they have significant interest in.
  - Inside information
    - Chinese walls
    - Restricted list
  - Required return on capital (relative to risk) is higher for securities firms than for institutional investors.
    - Find the best use for “balance sheet”